AMENDMENTS TO THE CLAIMS

Applicants submit below a complete listing of the current claims, including marked-up claims with insertions indicated by underlining and deletions indicated by strikeouts and/or double bracketing. This listing of claims replaces all prior versions, and listings, of claims in the application.

1. (Previously presented) An electrochemical device comprising a first pole, a second pole, and an ionic conductor, the first pole comprising:

an active material having at least one element selected from the group consisting of 1B Group, 2B Group, 6A Group, 7A Group, and 8 Group of a short-form periodic table; and

a conductive material comprising a mixture of fine graphite powder and fine carbon powder, the fine carbon powder having particle diameters on the order of nanometers;

the ionic conductor comprising an element belonging to 2A Group and/or 3B Group of the short-form periodic table, wherein:

the active material has an average particle diameter as small as 1 nanometer, so that the active material exhibits battery reaction as a result of ions from the ionic conductor interacting with particles in the active material.

2. (Previously presented) The electrochemical device as defined in Claim 1, wherein the active material for the first pole comprises a mixture of one or more compounds, each of the one or more compounds is a metal oxide or a metal sulfide represented by a general formula.

(1) MX,

wherein M is an element selected from a group consisting of Cr, Mn, Fe, Co, Ni, Cu, Zn, Pd, Ag, Pt, and Au, and X is an element selected from a group consisting of O and S.

3. (Previously presented) The electrochemical device as defined in Claim 2, wherein the metal oxide or the metal sulfide represented by the general formula (1) is composed of an element M and an element X such that a ratio of M to X is in a range from 0.3 to 3.

4. (Previously presented) The electrochemical device as defined in Claim 1, wherein the active material for the first pole has an average particle diameter no smaller than 1 nanometer and no larger than 100 micrometers.

5. (Previously presented) The electrochemical device as defined in Claim 1, wherein the first pole is formed from the active material mixed with the conductive material and a polymeric binder.

6. (Previously presented) The electrochemical device as defined in Claim 1, wherein ions from the ionic conductor comprise magnesium ions, aluminum ions, and/or calcium ions.

7. (Previously presented) The electrochemical device as defined in Claim 1, wherein the second pole comprises magnesium, aluminum, and/or calcium in the form of a simple substance or a compound.

8. (Previously presented) The electrochemical device as defined in Claim 1, wherein the ionic conductor is an electrolytic solution or a solid electrolyte.

9. (Previously presented) The electrochemical device as defined in Claim 1, wherein the electrochemical device is a primary or secondary battery.

10. (Previously presented) An electrochemical device comprising a first pole, a second pole, and an ionic conductor, wherein:

the first pole comprises an active material comprising at least one compound represented by a general formula

MX,

wherein M is an element selected from a group consisting of Cr, Mn, Fe, Co, Ni, Cu, Zn, Pd, Ag, Pt, and Au, and X is an element selected from a group consisting of O and S; and

a conductive material comprising a mixture of fine graphite powder and fine carbon powder, the fine carbon powder having particle diameters of the order of nanometers;

the ionic conductor comprises an element belonging to 2A Group and/or 3B Group of a short-form periodic table;

the active material has an average particle diameter as small as 1 nanometer, so that the active material exhibits battery reaction as a result of ions from the ionic conductor interacting with particles in the active material.

11. (Previously presented) The electrochemical device of claim 10, wherein the active material comprises a mixture of a plurality of compounds, each of the plurality of compounds being represented by the general formula MX.

12. (Previously Presented) The electrochemical device of claim 10, wherein the electrochemical device is a primary or secondary battery, and wherein crystal structure of the active material is observably unchanged after charging and/or discharging during at least one cycle.

13. (Previously presented) The electrochemical device of claim 10, wherein the electrochemical device is a primary or secondary battery, and wherein crystal state of the active material is observably unchanged after charging and/or discharging during at least one cycle.

14. (Previously presented) The electrochemical device of claim 10, wherein a ratio of M to X in the at least one compound is between 0.3 and 3.

15. (Previously presented) The electrochemical device of claim 10, wherein a ratio of M to X in the at least one compound is between 0.5 and 0.7.

16. (Previously presented) The electrochemical device of claim 10, wherein the active material has an average particle diameter between 1 nanometer and 1 micrometer.

17. (Previously presented) The electrochemical device of claim 10, wherein the active material has an average particle diameter between 10 nanometers and 300 nanometers.

18. (Previously presented) The electrochemical device of claim 10, wherein the ions from the ionic conductor comprise magnesium ions, aluminum ions, and/or calcium ions.

19. (Previously presented) The electrochemical device of claim 10, wherein the second pole comprises magnesium, aluminum, and/or calcium in form of a simple substance or a compound.

20. (Previously presented) The electrochemical device of claim 10, wherein the first pole comprises a mixture of the active material, the conductive material, and a polymeric binder.

21. (Currently amended) The electrochemical device of claim 1, wherein the ionic conductor comprises $Mg(AlCl_2EtBu)_2$ and constant voltage discharging occurs between 1 and 1.5 volts.

22. (Currently amended) The electrochemical device of claim 10, wherein the ionic conductor comprises $Mg(AlCl_2EtBu)_2$ and constant voltage discharging occurs between 1 and 1.5 volts.